RUST GEOTECH INC.

Spectral Gamma-Ray Borehole
Log Data Report

Borehole 52-06-02

Log Event A

Borehole Information

Farm : TY	**Tank :** TY-106	**Site Number :** 299-W10-100
N-Coord : 42,443	**W-Coord :** 75,928	**TOC Elevation :** 670.57
Water Level, ft :	**Date Drilled :** 12/1971	

Casing Record

Type : Steel-welded	Thickness : 0.280	ID, in. : 6
Top Depth, ft. : 0	Bottom Depth, ft. : 66	

Borehole Notes:
The driller's log for this borehole could not be located. Hanford Wells (PNL-8800) reports that the borehole was drilled in December 1971 to a depth of 66 ft and completed with 6-in. steel casing. The casing thickness is presumed to be 0.280 in., on the basis of published thickness for schedule-40, 6-in. steel tubing.

The top of the casing, which is the zero reference for the SGLS, is approximately even with the tank farm surface. The casing lip is contained within a concrete collar.

Equipment Information

Logging System : 1	**Detector Type :** HPGe	**Detector Efficiency:** 35.0 %
Calibration Date : 04/1996	**Calibration Reference :** GJPO-HAN-5	**Logging Procedure :** P-GJPO-1783

Log Run Information

Log Run Number : 1	**Log Run Date :** 5/5/1996	**Logging Engineer:** Mike Widdop
Start Depth, ft.: 65.5	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 0.0	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

Borehole 52-06-02

Log Event A

Analysis Information

Analyst : H.D. Mac Lean

Data Processing Reference : P-GJPO-1787 Analysis Date : 2/6/1997

Analysis Notes :

This borehole was logged in a single logging run. The field verification spectra acquired during the pre-survey system check failed to meet the acceptance criteria established for the peak shape and system efficiency. A nonconformance report issued in August 1996 (N-96-05) identified the cause of this failure as a power supply malfunction that resulted in a low detector bias voltage being supplied to the logging tool. This malfunction occurred in the mornings during start-up of the cold system; therefore, an extra long system warm-up time was required to bring the system to its optimal operating condition. The nonconformance report also documents that radionuclide concentrations calculated from data collected in the first 2 hours of logging operation could be systematically understated by about 10 percent. Data acquired during the first 2 hours of the logging run (from the bottom of the borehole to about 30 ft) may show a slight discrepancy in repeatability if the borehole is re-logged in the future.

The post-survey field verification spectra passed the acceptance criteria for the peak shape and system efficiency, indicating that the logging system was operating within specification after an extended warm-up period. The energy and peak-shape calibration from the field verification spectra that most closely matched the energy distribution on the logging spectra were used to establish the channel-to-energy parameters used in processing the spectra acquired during logging. Because of system drift related to the detector voltage problem, it was necessary to transfer the energy calibration and peak shape calibration from the pre-survey verification spectra to some of the logging spectra acquired during the initial portion of the logging run. Slight gain drift was experienced over brief intervals of the logging run. While processing data from a few of the logging spectra, it was necessary to adjust the energy calibration to compensate for this drift to maintain proper peak identification.

Casing correction factors for a 0.280-in.-thick steel casing were applied during analysis.

The man-made radionuclide Cs-137 was detected continuously throughout the length of this borehole. Between depths of 3 and 6 ft, this contaminant was detected in concentrations that ranged from about 5 to 13 pCi/g. Between depths of 6 and 40 ft, the measured Cs-137 concentrations were about 1 pCi/g. Cs-137 concentrations from 0.2 to 1 pCi/g were noted in a zone of continuous contamination from 40 to 64 ft.

The K-40 concentration values increase from a background of about 12 pCi/g above the 46-ft depth to about 18 pCi/g below this depth. The background K-40 concentrations decrease again in the interval from 63 to 66 ft (the bottom of the borehole).

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Reports for tanks TY-104 and TY-106.

Log Plot Notes:

Separate log plots show the concentrations of the man-made (Cs-137) and the naturally occurring radionuclides (KUT). The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

Log Event A

Borehole 52-06-02

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.

A combination plot includes the man-made and natural radionuclides, in addition to the total gamma derived from the spectral data and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data.